

- Goals**
- Use angle postulates.
  - Classify angles as acute, right, obtuse, or straight.

**VOCABULARY**

Angle

Sides of an angle

Vertex of an angle

Congruent angles

Measure of an angle

Interior of an angle

Exterior of an angle

Acute angle

Right angle

Obtuse angle

Straight angle

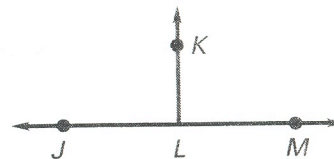
Adjacent angles

**Example 1 Naming Angles**

Name the angles in the figure.

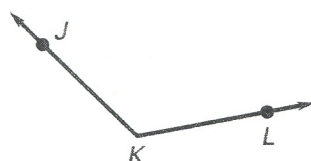
There are three different angles.

- \_\_\_\_\_ or \_\_\_\_\_
- \_\_\_\_\_ or \_\_\_\_\_
- \_\_\_\_\_ or \_\_\_\_\_

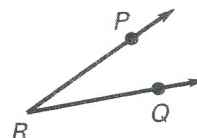


**Checkpoint** Write two names for the angle.

1.

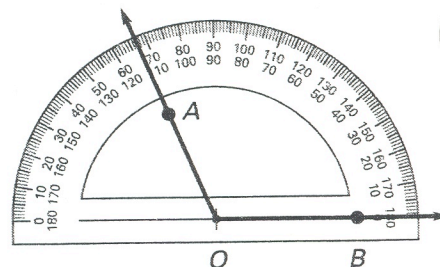


2.

**POSTULATE 3: PROTRACTOR POSTULATE**

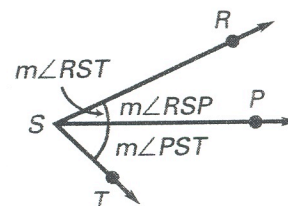
Consider a point A on one side of  $\overleftrightarrow{OB}$ . The rays of the form  $\overrightarrow{OA}$  can be matched one to one with the real numbers from 0 to \_\_\_\_\_.

The measure of \_\_\_\_\_ is equal to \_\_\_\_\_ between the real numbers for  $\overrightarrow{OA}$  and  $\overrightarrow{OB}$ .

**POSTULATE 4: ANGLE ADDITION POSTULATE**

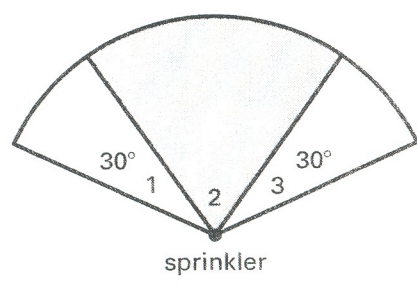
If P is in the interior of  $\angle RST$ , then

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$



**Example 2** Calculating Angle Measures

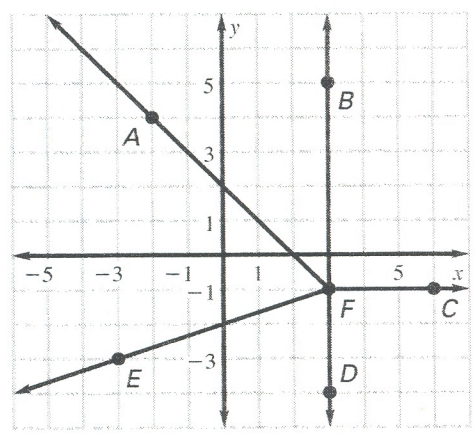
**Lawn Care** A lawn is watered by a sprinkler that has two fixed spray heads that each spray water in a fan shape. The angle that determines each of the fan shapes is  $120^\circ$ . The shaded area in the diagram shows where the two fan shapes overlap. Find the measure of  $\angle 2$ .



**Example 3** Classifying Angles in a Coordinate Plane

Measure the angle. Then classify the angle as acute, right, obtuse, or straight.

- a.  $\angle AFD$
- b.  $\angle AFE$
- c.  $\angle BFD$
- d.  $\angle BFC$



**Solution**

Use a protractor to measure each angle.

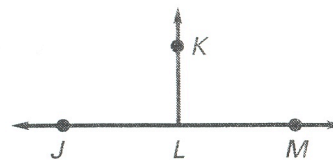
Measure	Classification
a. $m\angle AFD =$ _____	_____
b. $m\angle AFE =$ _____	_____
c. $m\angle BFD =$ _____	_____
d. $m\angle BFC =$ _____	_____

**Example 1 Naming Angles**

Name the angles in the figure.

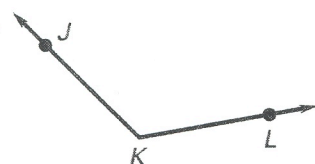
There are three different angles.

- \_\_\_\_\_ or \_\_\_\_\_
- \_\_\_\_\_ or \_\_\_\_\_
- \_\_\_\_\_ or \_\_\_\_\_

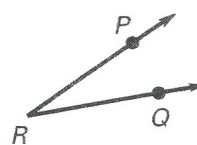


**✓ Checkpoint** Write two names for the angle.

1.



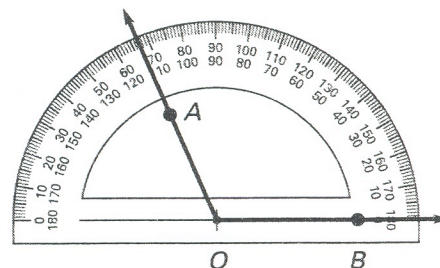
2.

**POSTULATE 3: PROTRACTOR POSTULATE**

Consider a point A on one side of  $\overleftrightarrow{OB}$ . The rays of the form  $\overrightarrow{OA}$  can be matched one to one with the real numbers from 0 to \_\_\_\_\_.

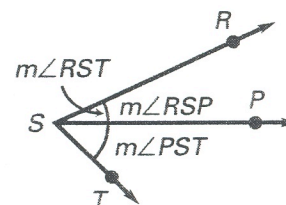
The measure of \_\_\_\_\_ is equal to \_\_\_\_\_

\_\_\_\_\_ between the real numbers for  $\overrightarrow{OA}$  and  $\overrightarrow{OB}$ .

**POSTULATE 4: ANGLE ADDITION POSTULATE**

If P is in the interior of  $\angle RST$ , then

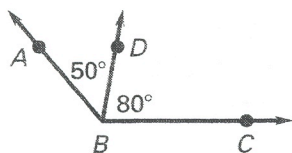
$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$



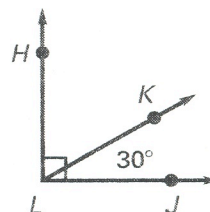


- ✓ **Checkpoint** Use the Angle Addition Postulate to find the measure of the angle.

3.  $m\angle ABC$



4.  $m\angle HLK$



State whether the angle appears to be *acute*, *right*, *obtuse*, or *straight*. Then estimate its measure.

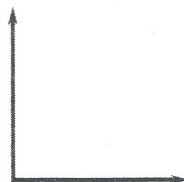
5.



6.



7.



8.



9. Plot the points  $P(-2, 4)$ ,  $Q(5, 7)$ ,  $R(7, 2)$ , and  $S(1, -1)$ . Then measure and classify  $\angle PRS$ .

